I claim:

1. A magnetometer comprising:
an electrically conducting string, the string receiving a current; and
means for supporting the string in tension at two locations;
the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string that can be detected.

2. The magnetometer as recited in claim 1, wherein the electrically conducting string comprises an insulating fiber coated with an electrically conducting material.

3. The magnetometer of claim 2, further comprising a light source, wherein the fiber is light conducting.

4. The magnetometer as recited in claims 1,2, or 3 further comprising a means for varying the tension of the string or fiber.

5. The magnetometer as recited in claim 4, the means for varying the tension comprising piezo elements placed under the means for supporting.

6. The magnetometer as recited in claim 4, the means for varying the tension comprising a silicon substrate containing a plurality of strings or fibers of varying lengths, the current being switchable between the strings or fibers.

7. A magnetometer array comprising a plurality of the magnetometers of claims 1, 2, or 3, wherein the magnetometers are joined end to end with the portion of the string or fiber connecting two magnetometers not in tension.

8. The magnetometer array as recited in claim 7, further comprising means for varying the tension in the string or fiber of each magnetometer in the array.

9. The magnetometer array as recited in claim 8, the means for varying the tension comprising piezo elements placed under the means for supporting.

10. The magnetometer array as recited in claim 8, the means for varying the tension comprising a silicon substrate containing a plurality of strings or fibers of varying lengths, the current being switchable between the strings or fibers.

11. The magnetometer of claim 3, further comprising means for detecting the motion of the fiber.

12. The magnetometer as recited in claim 11, the means for detecting comprising:
a first aperature in the conducting material on the fiber; and
a detector for detecting light escaping through the aperature.

13. The magnetometer as recited in claim 12, wherein the detector comprises a position sensitive lateral cell optical detector.

14. The magnetometer as recited in claim 12, wherein the detector comprises a multi-cell optical detector.

15. The magnetometer as recited in claim 12, wherein the detector comprises a CCD detector.

16. The magnetometer as recited in claim 12, further comprising a defect in the fiber surface for increasing scattered amplitude and, hence, signal-to - noise ratio.

17. The magnetometer as recited in claim 12, further comprising a scattering means in the center of the fiber for increasing scattered amplitude and, hence, signal-to-noise ratio.

18. The magnetometer as recited in claim 12, further comprising a second aperature in the conducting material on the fiber, the second aperature being orthongonal to the first aperature for simultaneous measurement of two orthongonal vector components of the motion of the fiber and, hence, two magnetic field components.

19. A method for detecting a vector magnetic field comprising the steps of:
supporting an electrically conducting string in tension at two locations;
inserting a current at one end of the string and extracting it at the other end;
placing the string in a magnetic field perpendicular to the direction of the current in the string, thereby producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string; and
detecting the deflection in the string.

20. The method as recited in claim 19, wherein the electrically conducting string comprises an insulating fiber coated with an electrically conducting material.

21. The method as recited in claims 19 or 20, further comprising the step of varying the tension of the string or fiber.

22. A method for detecting a vector magnetic field comprising the steps of:

supporting a light conducting fiber coated with an electrically conducting material in tension at two locations;
inserting a current and light at one end of the string and extracting the current and light at the other end;
placing the fiber in a magnetic field perpendicular to the direction of the current in the fiber, thereby producing a Lorentz Force perpendicular to the fiber, the Lorentz Force causing deflection in the fiber; and
detecting the deflection in the fiber.

23. The method as recited in claim 22, further comprising the step of varying the tension of the fiber.

24. The method as recited in claim 23, further comprising the steps of:
forming an aperature in the conducting material on the fiber; and
detecting the light escaping through the aperature.

25. A magnetometer comprising:
a mechanical resonator other than a bar, the resonator receiving a current; and
means for supporting the resonator;
the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the resonator, the Lorentz Force causing deflection in the resonator that can be detected.